

# FLUVIEW

A Weekly Influenza Surveillance Report Prepared by the Influenza Division



## 2010-2011 Influenza Season Week 10 ending March 12, 2011

*All data are preliminary and may change as more reports are received.***Synopsis:** During week 10 (March 6-12, 2011), influenza activity in the United States decreased.

- Of the 6,384 specimens tested by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories and reported to CDC/Influenza Division, 1,346 (21.1%) were positive for influenza.
- The proportion of deaths attributed to pneumonia and influenza (P&I) was at or above the epidemic threshold for the seventh consecutive week.
- Eleven influenza-associated pediatric deaths were reported bringing the season total to 71. Four of these deaths were associated with an influenza B virus, three were associated with 2009 influenza A (H1N1) viruses, two were associated with influenza A (H3N2) viruses, and two were associated with an influenza A virus for which the subtype was not determined.
- The proportion of outpatient visits for influenza-like illness (ILI) was 3.0%, which is above the national baseline of 2.5%. Eight of the 10 regions (Regions 1, 2, 4, 5, 7, 8, 9 and 10) reported ILI at or above region-specific baseline levels. Four states experienced high ILI activity; six states experienced moderate ILI activity; 11 states experienced low ILI activity; 28 states and New York City experienced minimal ILI activity, and the District of Columbia and one state had insufficient data.
- The geographic spread of influenza in 31 states was reported as widespread; 15 states reported regional influenza activity; the District of Columbia and three states reported local influenza activity; Puerto Rico, the U.S. Virgin Islands and one state reported sporadic influenza activity, and Guam reported no influenza activity.

## National and Regional Summary of Select Surveillance Components

HHS Surveillance Regions*	Data for current week			Data cumulative since October 3, 2010 (Week 40)				
	Out-patient ILI†	% positive for flu‡	Number of jurisdictions reporting regional or widespread activity§	A (H3)	2009 A (H1N1)	A (Subtyping not performed)	B	Pediatric Deaths
<b>Nation</b>	Elevated	21.1%	46 of 54	14,312	8,798	10,048	11,410	71
<b>Region 1</b>	Elevated	47.4%	6 of 6	1,485	722	57	257	0
<b>Region 2</b>	Elevated	25.8%	2 of 4	568	266	958	260	7
<b>Region 3</b>	Normal	35.8%	5 of 6	2,583	2,350	761	653	10
<b>Region 4</b>	Elevated	19.0%	6 of 8	1,236	1,189	2,957	3,660	14
<b>Region 5</b>	Elevated	42.4%	6 of 6	1,533	1,222	339	922	13
<b>Region 6</b>	Normal	23.7%	5 of 5	2,106	497	2,191	2,461	15
<b>Region 7</b>	Elevated	28.0%	4 of 4	622	496	267	576	0
<b>Region 8</b>	Elevated	24.1%	5 of 6	1,636	589	1,777	1,493	4
<b>Region 9</b>	Elevated	26.3%	4 of 5	1,735	950	626	1,035	7
<b>Region 10</b>	Elevated	26.8%	3 of 4	808	517	115	93	1

\*HHS regions (Region 1 CT, ME, MA, NH, RI, VT; Region 2: NJ, NY, Puerto Rico, U.S. Virgin Islands; Region 3: DE, DC, MD, PA, VA, WV; Region 4: AL, FL, GA, KY, MS, NC, SC, TN; Region 5: IL, IN, MI, MN, OH, WI; Region 6: AR, LA, NM, OK, TX; Region 7: IA, KS, MO, NE; Region 8: CO, MT, ND, SD, UT, WY; Region 9: AZ, CA, Guam, HI, NV; and Region 10: AK, ID, OR, WA).

† Elevated means the % of visits for ILI is at or above the national or region-specific baseline.

‡ National data are for current week; regional data are for the most recent three weeks.

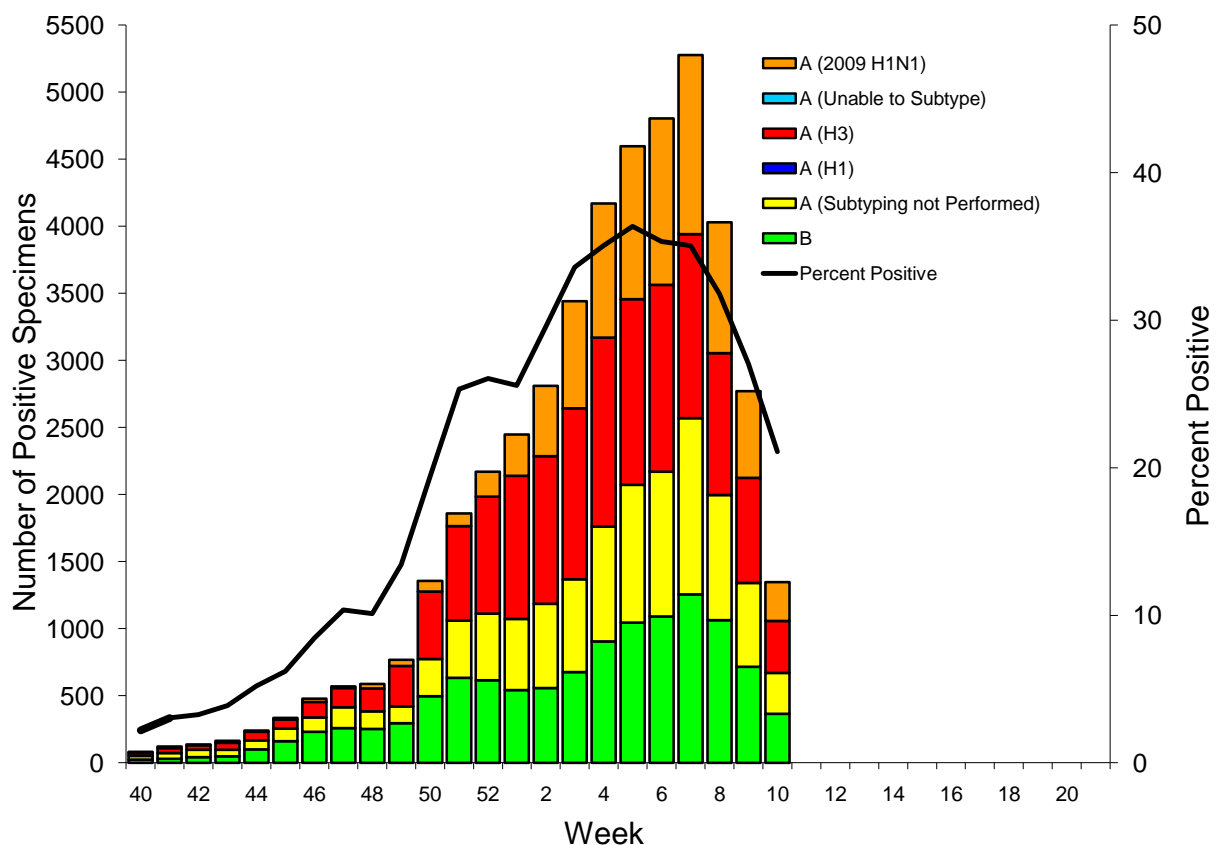
§ Includes all 50 states, the District of Columbia, Guam, Puerto Rico, and the U.S. Virgin Islands.

**U.S. Virologic Surveillance:** WHO and NREVSS collaborating laboratories located in all 50 states and Washington D.C. report to CDC the number of respiratory specimens tested for influenza and the number positive by influenza type and subtype. The results of tests performed during the current week are summarized in the table below.

	<b>Week 10</b>
<b>No. of specimens tested</b>	6,384
<b>No. of positive specimens (%)</b>	1,346 (21.1%)
<b><i>Positive specimens by type/subtype</i></b>	
<b>Influenza A</b>	981 (72.9%)
<b>A (2009 H1N1)</b>	288 (29.4%)
<b>A (subtyping not performed)</b>	307 (31.3%)
<b>A (H3)</b>	386 (39.3%)
<b>Influenza B</b>	365 (27.1%)

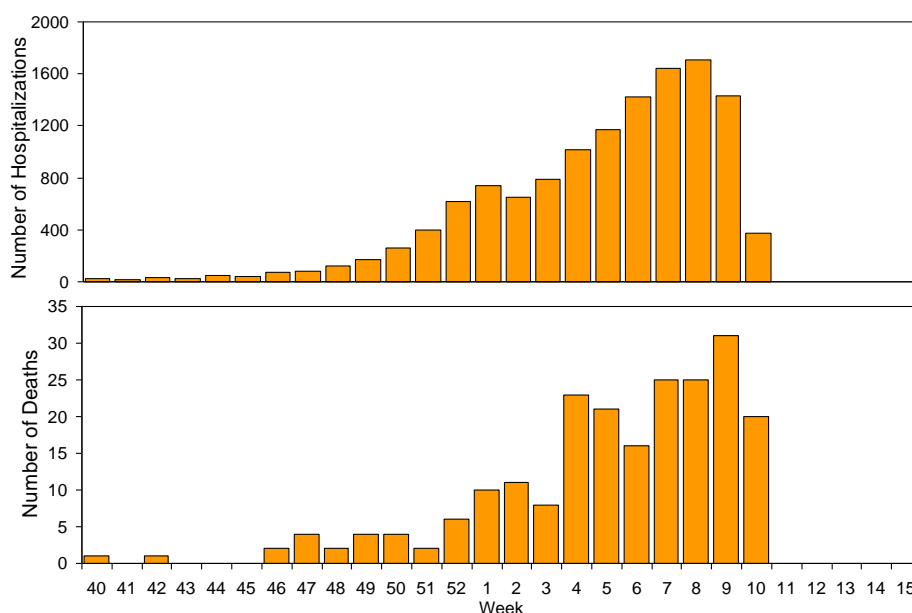
All influenza types and subtypes have been identified at high levels this season and continue to circulate widely. The predominant virus has varied by week, region, and even between states within the same region.

### Influenza Positive Tests Reported to CDC by U.S. WHO/NREVSS Collaborating Laboratories, National Summary, 2010-11 Season



**Aggregate Hospitalization and Death Reporting Activity (AHDRA):** This system tracks weekly counts of laboratory-confirmed influenza-associated hospitalizations and deaths and was implemented on August 30, 2009, during the 2009 pandemic, and ended on April 4, 2010. AHDRA surveillance during the 2010-11 season is being continued on a voluntary basis and 14 jurisdictions reported during week 10. From October 3, 2010 – March 12, 2011, 12,855 laboratory-confirmed influenza associated hospitalizations and 216 laboratory-confirmed influenza associated deaths were reported to CDC.

## Weekly Laboratory-Confirmed Influenza-Associated Hospitalizations and Deaths, National Summary, 2010-11 Season



**Antigenic Characterization:** CDC has antigenically characterized 1,199 influenza viruses [240 2009 influenza A (H1N1) viruses, 552 influenza A (H3N2) viruses, and 407 influenza B viruses] collected by U.S. laboratories since October 1, 2010.

### 2009 Influenza A (H1N1) [240]

- Two hundred thirty-nine (99.6%) of the 240 tested were characterized as A/California/7/2009-like, the influenza A (H1N1) component of the 2010-11 influenza vaccine for the Northern Hemisphere. One virus (0.4%) of the 240 tested showed reduced titers with antiserum produced against A/California/7/2009.

### Influenza A (H3N2) [552]

- Five hundred thirty-five (96.9%) of the 552 tested were characterized as A/Perth/16/2009-like, the influenza A (H3N2) component of the 2010-11 influenza vaccine for the Northern Hemisphere. Seventeen viruses (3.1%) of the 552 tested showed reduced titers with antiserum produced against A/Perth/16/2009.

### **Influenza B (B/Victoria/02/87 and B/Yamagata/16/88 lineages) [407]**

#### **Victoria Lineage [382]**

- Three hundred eighty-two (93.9%) of the 407 influenza B viruses tested belong to the B/Victoria lineage of viruses.
  - Three hundred eighty-one (99.7%) of these 382 viruses were characterized as B/Brisbane/60/2008-like, the recommended influenza B component for the 2010-11 Northern Hemisphere influenza vaccine.
  - One (0.3%) of these 382 viruses showed somewhat reduced titers with antisera produced against B/Brisbane/60/2008.

#### **Yamagata Lineage [25]**

- Twenty-five (6.1%) of the 407 viruses were identified as belonging to the B/Yamagata lineage of viruses.

**Antiviral Resistance:** Testing of 2009 influenza A (H1N1), influenza A (H3N2), and influenza B virus isolates for resistance to neuraminidase inhibitors (oseltamivir and zanamivir) is performed at CDC using a functional assay. Additional 2009 influenza A (H1N1) clinical samples are tested for a single known mutation in the neuraminidase protein of the virus that confers oseltamivir resistance (H275Y). The data summarized below combine the results of both test methods and includes samples that were tested as part of routine surveillance purposes; it does not include diagnostic testing specifically done because of clinical suspicion of antiviral resistance.

High levels of resistance to the adamantanes (amantadine and rimantadine) persist among 2009 influenza A (H1N1) and A (H3N2) viruses (the adamantanes are not effective against influenza B viruses) circulating globally. As a result of the sustained high levels of resistance, data from adamantane resistance testing are not presented weekly in the table below.

#### **Neuraminidase Inhibitor Resistance Testing Results on Samples Collected Since October 1, 2010.**

	Virus Samples tested (n)	Resistant Viruses, Number (%)	Virus Samples tested (n)	Resistant Viruses, Number (%)
		Oseltamivir		Zanamivir
Seasonal Influenza A (H1N1)	0	0 (0.0)	0	0 (0.0)
Influenza A (H3N2)	454	0 (0.0)	447	0 (0.0)
Influenza B	418	0 (0.0)	418	0 (0.0)
2009 Influenza A (H1N1)	533	3 (0.6)	165	0 (0.0)

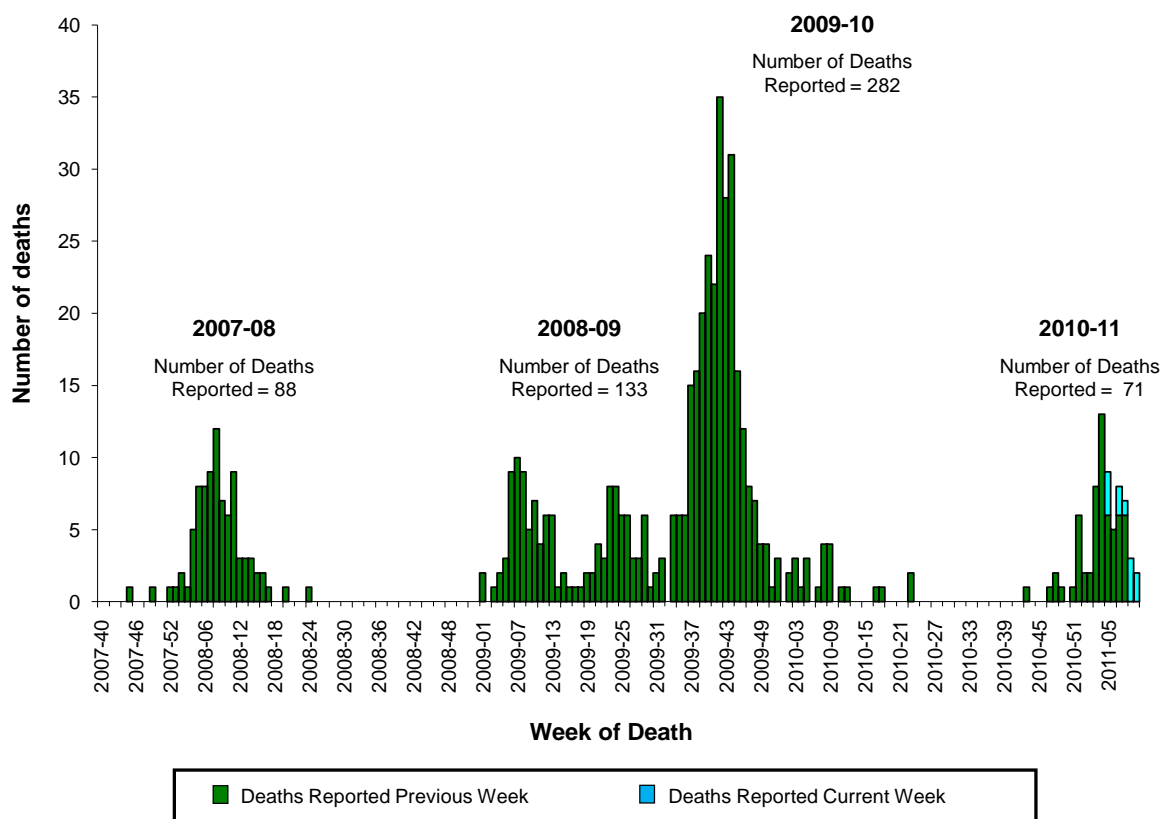
To prevent the spread of antiviral resistant virus strains, CDC reminds clinicians and the public of the need to continue hand and cough hygiene measures for the duration of any symptoms of influenza, even while taking antiviral medications. Additional information on antiviral recommendations for treatment and chemoprophylaxis of influenza virus infection is available at <http://www.cdc.gov/flu/antivirals/index.htm>.



**Influenza-Associated Pediatric Mortality:** Eleven influenza-associated pediatric deaths were reported to CDC during week 10. Four of these deaths were associated with an influenza B virus, three were associated with 2009 influenza A (H1N1) viruses, two were associated with influenza A (H3) viruses, and two were associated with an influenza A virus for which the subtype was not determined.

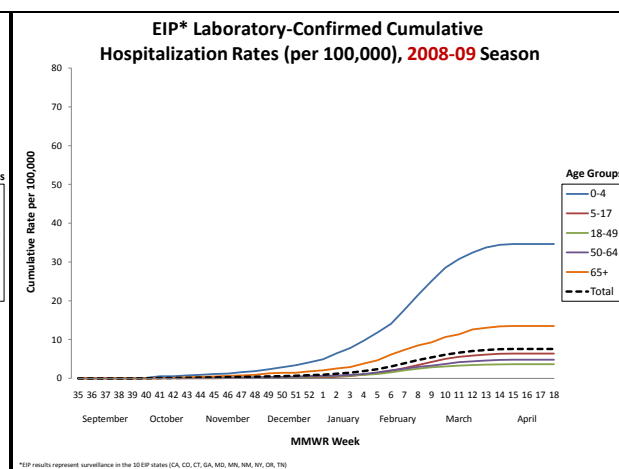
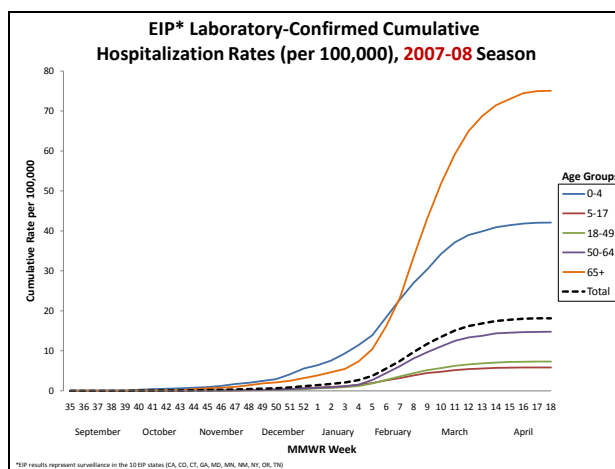
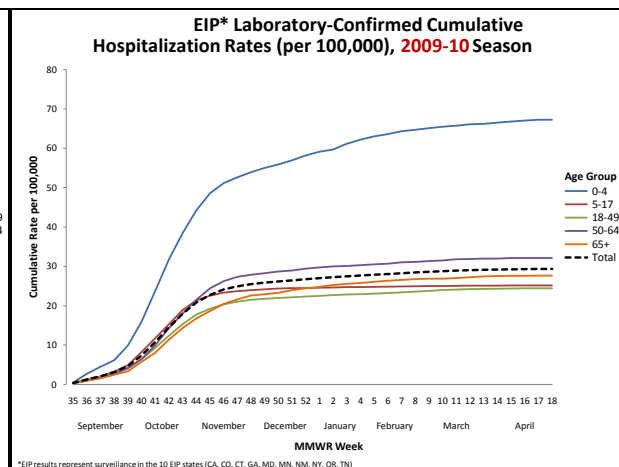
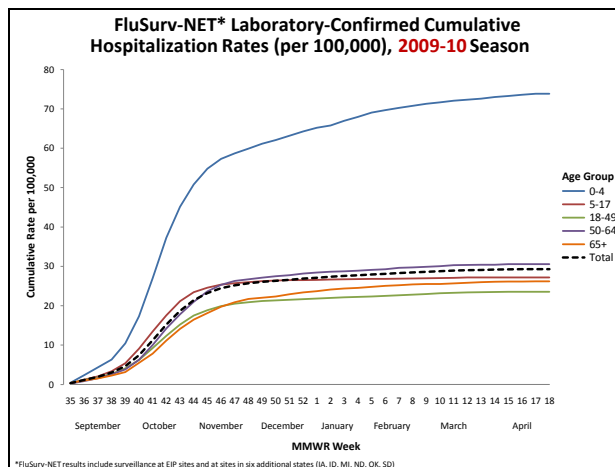
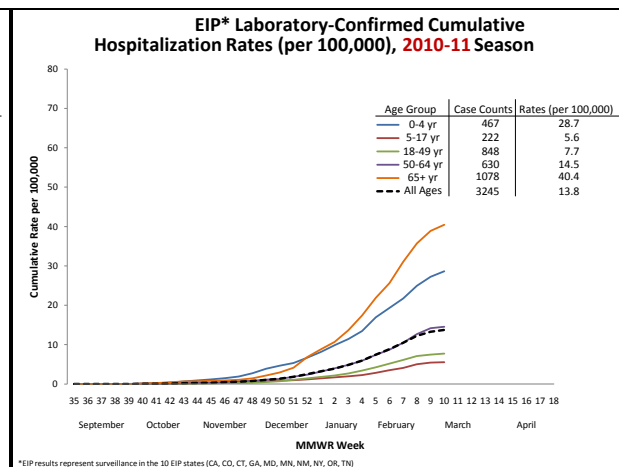
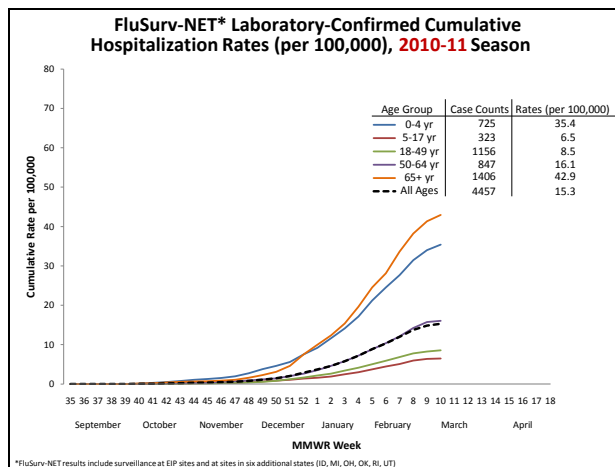
Seventy-one deaths from 27 states (Arizona, California, Colorado, Florida, Georgia, Hawaii, Illinois, Indiana, Kentucky, Louisiana, Michigan, Minnesota, Nevada, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Texas, Utah, Virginia, West Virginia, and Wisconsin) and Chicago and New York City have been reported during this influenza season. Twenty-seven of the 71 deaths reported were associated with influenza B viruses, 14 deaths reported were associated with influenza A (H3) viruses, 16 were associated with 2009 influenza A (H1N1) viruses, and 14 were associated with an influenza A virus for which the subtype was not determined.

### Number of Influenza-Associated Pediatric Deaths by Week of Death: 2007-08 season to present



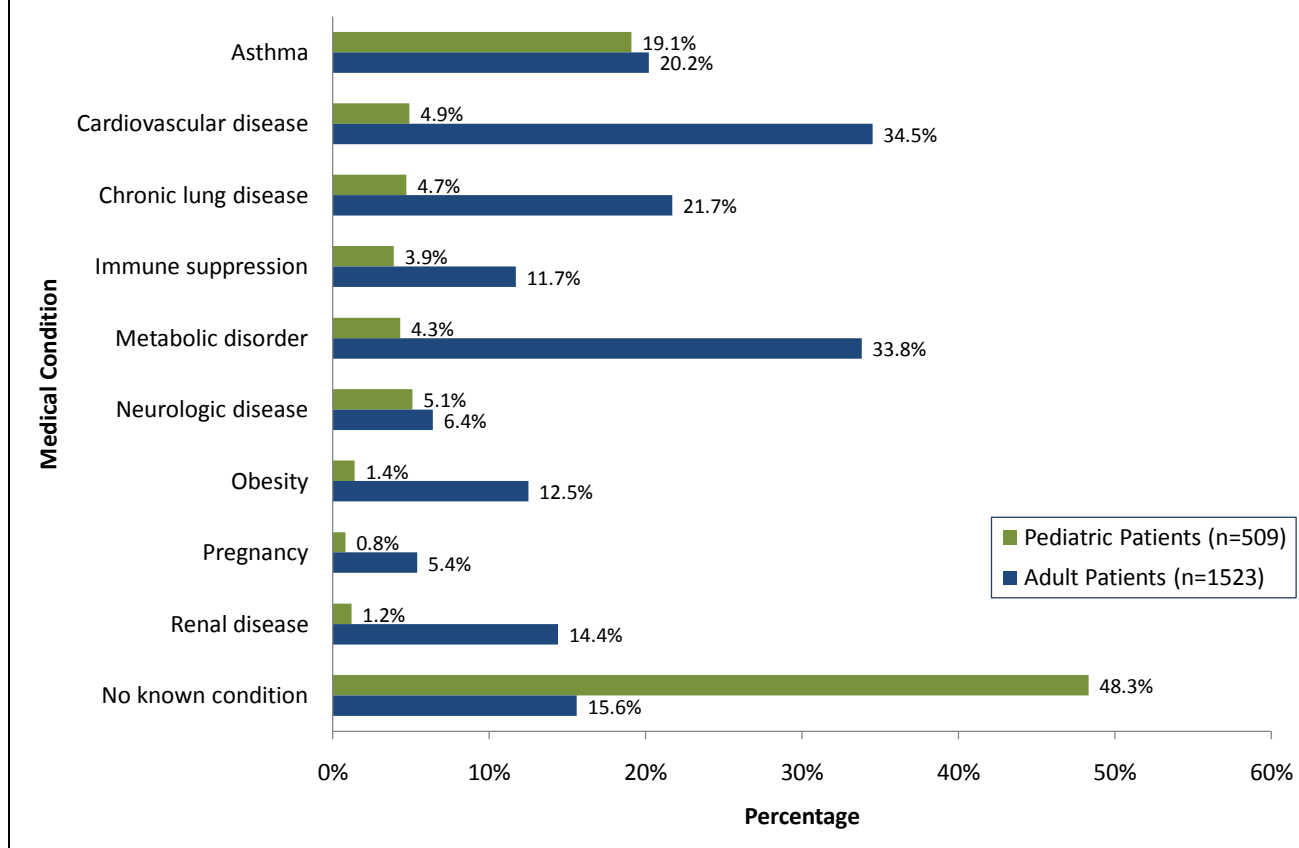
**Influenza-Associated Hospitalizations:** FluSurv-NET conducts population-based surveillance for laboratory-confirmed influenza-associated hospitalizations in children (persons younger than 18 years) and adults. The current network covers over 80 counties in the 10 Emerging Infections Program (EIP) states (CA, CO, CT, GA, MD, MN, NM, NY, OR, and TN) and six additional states (ID, MI, OH, OK, RI, and UT).

The current season's rates include cases from October 1, 2010 to March 12, 2011.



Please note the following: (i) The scale of the vertical axis on the Cumulative Hospitalization Rate figures will be adjusted during the season to make the graphs easier to read; (ii) FluSurv-NET was created during the 2009-2010 season when surveillance in six states was added to ongoing surveillance for influenza-associated hospitalizations in 10 EIP states. During the 2009-2010 season, FluSurv-NET included sites in the 10 EIP sites and sites in IA, ID, MI, ND, OK, and SD; (iii) the 2008-2009 EIP season ended April 14, 2009, due to the onset of the 2009 H1N1 pandemic.

## Selected underlying medical conditions<sup>1</sup> in patients hospitalized with influenza, FluSurv-NET 2010-2011<sup>2</sup>



<sup>1</sup>Asthma may include a diagnosis of asthma and reactive airway disease; Cardiovascular diseases may include conditions such as coronary heart disease, cardiac valve disorders, congestive heart failure, pulmonary hypertension, and aortic stenosis; Chronic lung diseases may include conditions such as bronchiolitis obliterans, chronic aspiration pneumonia, and interstitial lung disease; Immune suppression may include conditions such as immunoglobulin deficiency, leukemia, lymphoma, HIV/AIDS, and individuals taking immunosuppressive medications; Metabolic disorders may include conditions such as diabetes mellitus, thyroid dysfunction, adrenal insufficiency, and liver disease; Neurologic diseases may include conditions such as seizure disorders, neuromuscular disorders, and cognitive dysfunction; Obesity was defined as a body mass index (BMI) greater than 30 kg/m<sup>2</sup> in patients 20 years of age or older, or equal to or greater than the 95<sup>th</sup> percentile of a patient's age and sex category in patients under 20 years of age; Renal diseases may include conditions such as acute or chronic renal failure, nephrotic syndrome, glomerulonephritis, and impaired creatinine clearance.

<sup>2</sup>Data as of March 15, 2011. Includes 2,032 (of a total 4,473 reported) cases for which data collection has been completed through the medical chart review stage.



**Demographic and clinical characteristics of laboratory-confirmed, influenza-associated hospitalizations identified in EIP<sup>1</sup> and FluSurv-NET<sup>2</sup> sites, 2006-2011**

	2010-2011 FluSurv-NET <sup>3</sup> N (%)	2009-2010 FluSurv-NET N (%)	2008-2009 EIP N (%)	2007-2008 EIP N (%)	2006-2007 EIP N (%)
<b>Total Cases</b>	4,473	7,517	1,698	3,930	1,279
<b>Age in Years</b>					
0-4	726 (16.2)	1,326 (17.6)	549 (32.3)	639 (16.3)	393 (30.7)
5-17	325 (7.3)	1,204 (16.0)	244 (14.4)	221 (5.6)	130 (10.2)
18-49	1,158 (25.9)	2,779 (37.0)	374 (22.0)	736 (18.7)	246 (19.2)
50-64	850 (19.0)	1,458 (19.4)	201 (11.8)	585 (14.9)	155 (12.1)
65+	1,408 (31.5)	750 (10.0)	330 (19.4)	1,749 (44.5)	355 (27.8)
<b>Sex</b>					
Male	2,060 (46.1)	3,517 (46.8)	832 (49.0)	1,825 (46.4)	631 (49.3)
Female	2,401 (53.7)	4,000 (53.2)	866 (51.0)	2,104 (53.5)	648 (50.7)
<b>Flu Type and Subtype</b>					
Influenza A	3,688 (82.5)	7,355 (97.8)	1,236 (72.8)	2,562 (65.2)	1,082 (84.6)
Specimens subtyped <sup>4</sup>	858	5,325	--	--	--
A (H1)	0 (0.0)	0 (0.0)	--	--	--
A (H3)	585 (68.2)	3 (0.1)	--	--	--
A (2009 H1N1)	273 (31.8)	5,322 (99.9)	--	--	--
Influenza B	660 (14.8)	52 (0.7)	382 (22.5)	1,199 (30.5)	149 (11.6)
<b>Intensive Care Unit</b>	341 (16.8)	1,560 (20.8)	298 (17.6)	495 (12.6)	198 (15.5)
<b>Mechanical Ventilation</b>	144 (7.1)	758 (10.1)	157 (9.2)	252 (6.4)	111 (8.7)
<b>Diagnosis of Pneumonia</b>	545 (26.8)	2,804 (37.3)	407 (24.0)	1,220 (31.0)	404 (31.6)
<b>Died</b>	44 (2.2)	222 (3.0)	49 (2.9)	104 (2.6)	24 (1.9)

Columns may not sum to 100% due to missing or unknown values.

<sup>1</sup>Surveillance in EIP states (CA, CO, CT, GA, MD, MN, NM, NY, OR, TN) was conducted from 2006-2011.

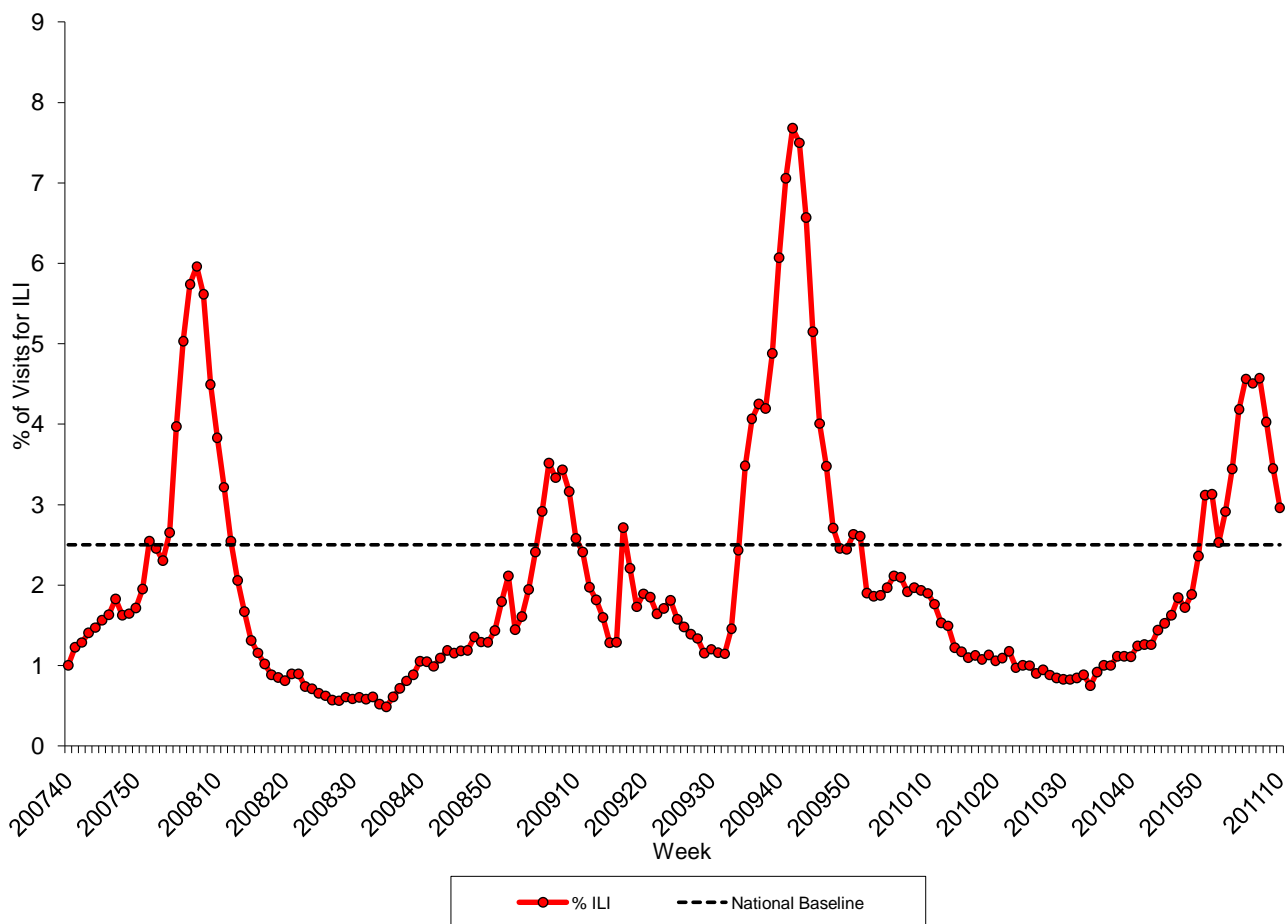
<sup>2</sup>FluSurv-Net includes surveillance at EIP sites and at sites in additional states (IA, ID, MI, ND, OK, SD in 2009-2010; ID, MI, OH, OK, RI, UT in 2010-2011).

<sup>3</sup>Data as of March 15, 2011. Results describing influenza A subtype, intensive care unit admission, mechanical ventilation, diagnosis of pneumonia, and death are from 2,032 (of a total 4,473 reported) cases for which data collection has been completed through the medical chart review stage.

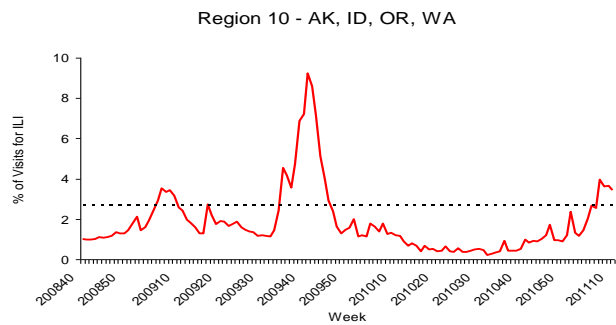
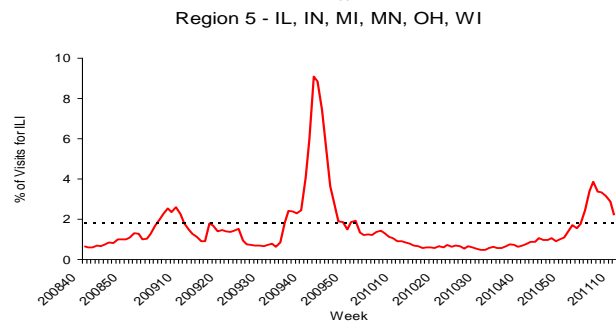
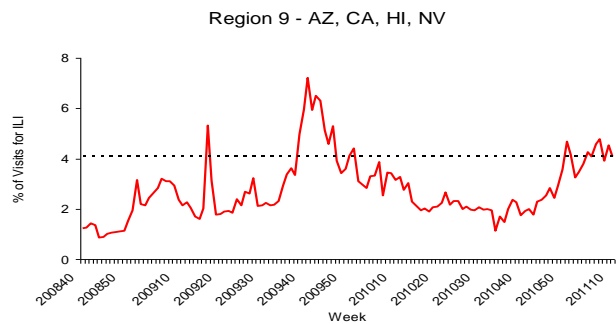
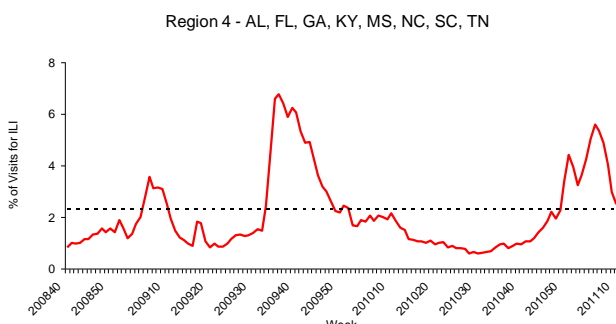
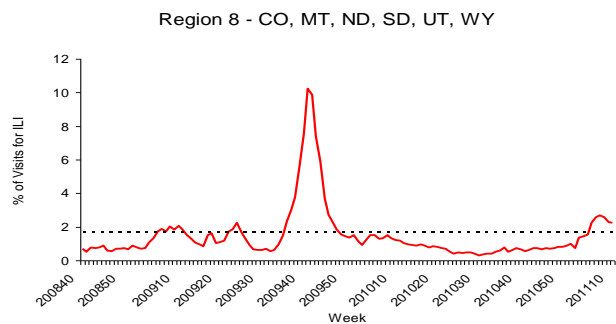
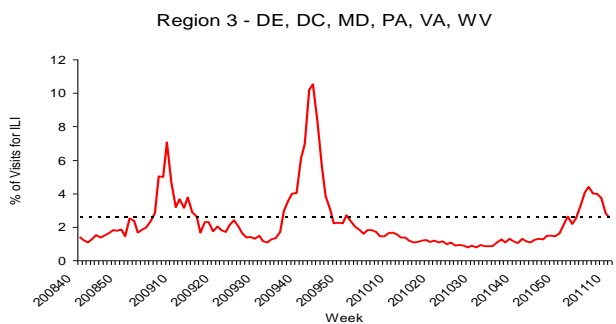
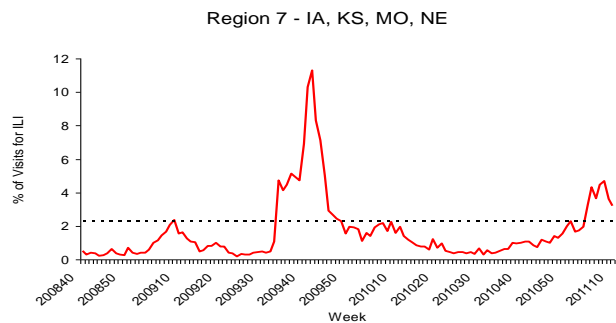
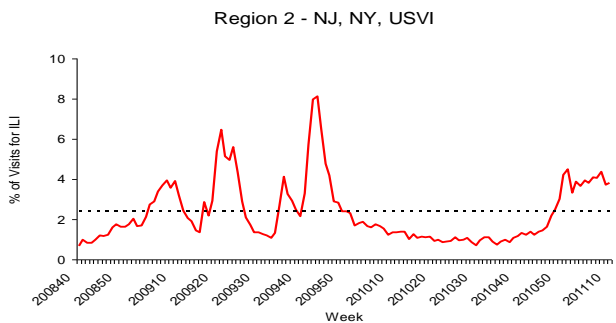
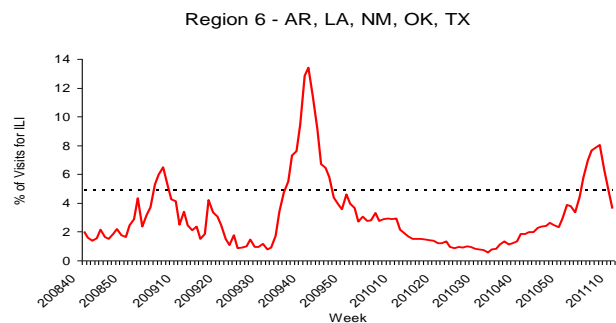
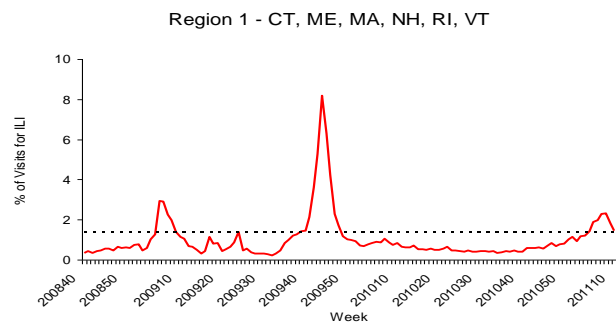
<sup>4</sup>Influenza A subtype results are available beginning with the 2007-2008 season. Percentages for influenza A subtypes are calculated using the number of influenza A specimens that were subtyped as a denominator.

**Outpatient Illness Surveillance:** Nationwide during week 10, 3.0% of patient visits reported through the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) were due to influenza-like illness (ILI). This percentage is above the national baseline of 2.5%.

Percentage of Visits for Influenza-like Illness (ILI) Reported by the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Weekly National Summary, September 30, 2007 – March 12, 2011



On a regional level, the percentage of outpatient visits for ILI ranged from 1.4% to 4.1% during week 10. Eight of the 10 regions (Regions 1, 2, 4, 5, 7, 8, 9 and 10) reported ILI at or above region-specific baseline levels.



— % ILI      ..... Baseline\*

NOTE: Scales differ between regions

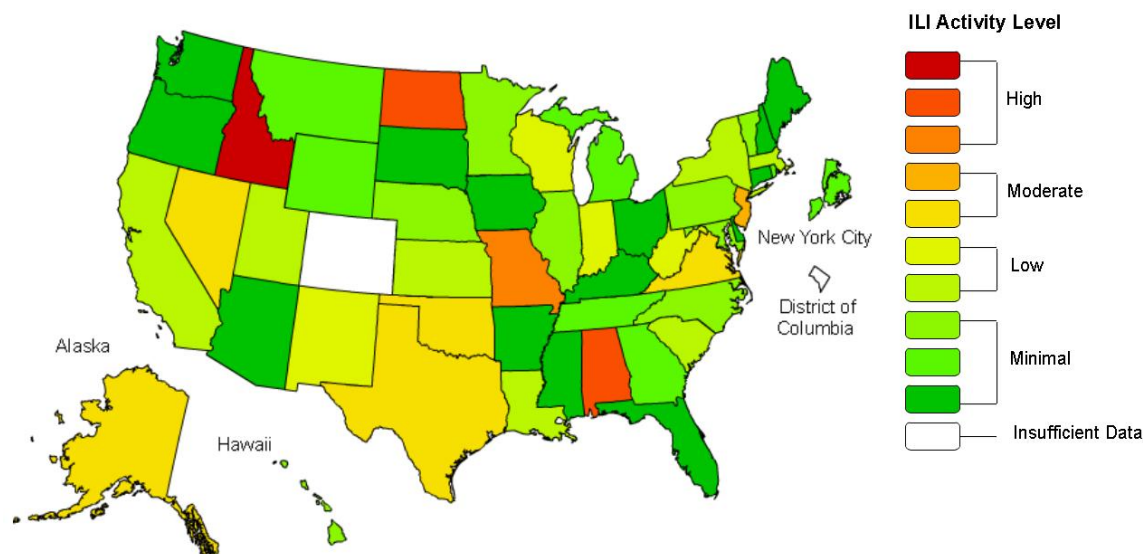
\*Use of the regional baselines for state data is not appropriate.

**ILINet State Activity Indicator Map:** Data collected in ILINet are used to produce a measure of ILI activity\* by state. Activity levels are based on the percent of outpatient visits in a state due to ILI and are compared to the average percent of ILI visits that occur during spring and fall weeks with little or no influenza virus circulation. Activity levels range from minimal, which would correspond to ILI activity from outpatient clinics being below the average, to high, which would correspond to ILI activity from outpatient clinics being much higher than the average. Because the clinical definition of ILI is very general, not all ILI is caused by influenza; however, when combined with laboratory data, the information on ILI activity provides a clear picture of influenza activity in the United States.

During week 10, the following ILI activity levels were experienced:

- Four states (Alabama, Idaho, Missouri, and North Dakota) experienced high ILI activity.
- Six states (Alaska, Nevada, New Jersey, Oklahoma, Texas, and Virginia) experienced moderate ILI activity.
- Eleven states (California, Indiana, Kansas, Louisiana, Massachusetts, New Mexico, New York, South Carolina, Utah, West Virginia, and Wisconsin) experienced low ILI activity.
- Minimal ILI activity was experienced by New York City and 28 states (Arizona, Arkansas, Connecticut, Delaware, Florida, Georgia, Hawaii, Illinois, Iowa, Kentucky, Maine, Maryland, Michigan, Minnesota, Mississippi, Montana, Nebraska, New Hampshire, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Tennessee, Vermont, Washington, and Wyoming).
- The District of Columbia and one state (Colorado) had insufficient data to calculate an activity level.

**Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet**  
**2010-11 Influenza Season Week 10 ending Mar 12, 2011**



Interactive web tool available at: <http://gis.cdc.gov/grasp/fluview/main.html>

\*This map uses the proportion of outpatient visits to health care providers for influenza-like illness to measure the ILI activity level within a state. It does not, however, measure the extent of geographic spread of flu within a state. Therefore, outbreaks occurring in a single city could cause the state to display high activity levels.

Data collected in ILINet may disproportionately represent certain populations within a state, and therefore, may not accurately depict the full picture of influenza activity for the whole state.

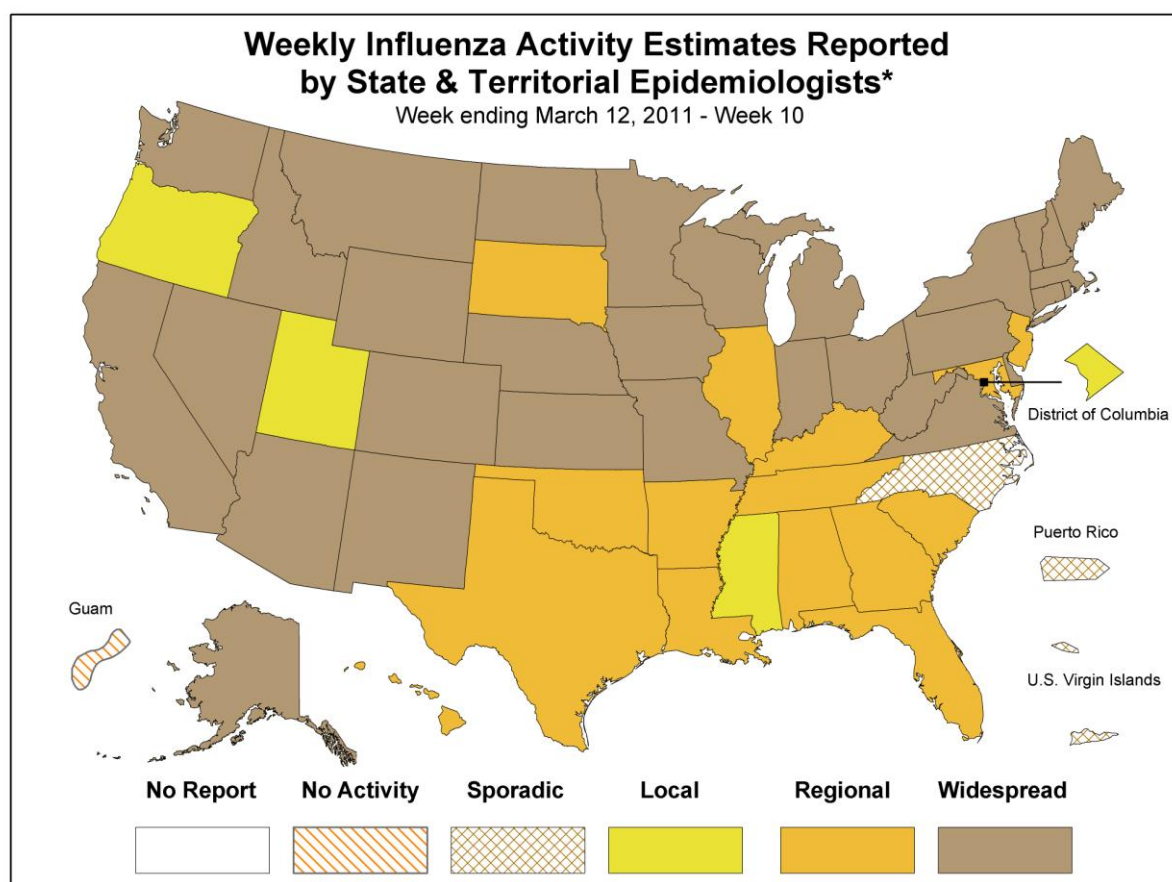
Data displayed in this map are based on data collected in ILINet, whereas the State and Territorial flu activity map are based on reports from state and territorial epidemiologists. The data presented in this map is preliminary and may change as more data is received.

Differences in the data presented by CDC and state health departments likely represent differing levels of data completeness with data presented by the state likely being the more complete.

**Geographic Spread of Influenza as Assessed by State and Territorial Epidemiologists:** The influenza activity reported by state and territorial epidemiologists indicates geographic spread of influenza viruses, but does not measure the severity of influenza activity.

During week 10, the following influenza activity was reported:

- Widespread influenza activity was reported by 31 states (Alaska, Arizona, California, Colorado, Connecticut, Delaware, Idaho, Indiana, Iowa, Kansas, Maine, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Mexico, New York, North Dakota, Ohio, Pennsylvania, Rhode Island, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Wyoming).
- Regional influenza activity was reported by 15 states (Alabama, Arkansas, Florida, Georgia, Hawaii, Illinois, Kentucky, Louisiana, Maryland, New Jersey, Oklahoma, South Carolina, South Dakota, Tennessee, and Texas).
- Local influenza activity was reported by the District of Columbia and three states (Mississippi, Oregon, and Utah).
- Sporadic influenza activity was reported by Puerto Rico, the U.S. Virgin Islands and one state (North Carolina).
- Guam reported no influenza activity.



\* This map indicates geographic spread & does not measure the severity of influenza activity

## **Additional National and International Influenza Surveillance Information**

Distribute Project: Additional information on the Distribute syndromic surveillance project, developed and piloted by the International Society for Disease Surveillance (ISDS) now working in collaboration with CDC, to enhance and support Emergency Department (ED) surveillance, is available at <http://isdsdistribute.org/>.

Google Flu Trends: Google Flu Trends uses aggregated Google search data in a model created in collaboration with CDC to estimate influenza activity in the U.S. For more information and activity estimates from the U.S. and worldwide, see <http://www.google.org/flutrends/>.

Europe: for the most recent influenza surveillance information from Europe, please see WHO/Europe at <http://www.euroflu.org/index.php> and visit the European Centre for Disease Prevention and Control at <http://ecdc.europa.eu/en/Activities/Surveillance/EISN/Pages/home.aspx>.

Public Health Agency of Canada: The most up to date influenza information from Canada is available at <http://www.phac-aspc.gc.ca/fluwatch/>.

World Health Organization FluNet: Additional influenza surveillance information from participating WHO member nations is available at <http://gamapserver.who.int/GlobalAtlas/home.asp>.

A description of surveillance methods is available at: <http://www.cdc.gov/flu/weekly/overview.htm>  
Report prepared: March 18, 2011.